Seed Systems and Varietal Adoption
Behaviour of Wheat Farmers in Kenya

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²CIMMYT
Kenya’s wheat production statistics

- Second most important crop after maize

<table>
<thead>
<tr>
<th>Category</th>
<th>Quantity</th>
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</thead>
<tbody>
<tr>
<td>Production</td>
<td>350,000 MT</td>
</tr>
<tr>
<td>Area</td>
<td>157,000 HA</td>
</tr>
<tr>
<td>Consumption</td>
<td>950,000 MT</td>
</tr>
<tr>
<td>Imports</td>
<td>600,000 MT</td>
</tr>
</tbody>
</table>
Production Structure

Small scale & Large Scale

**Small scale (2.5ha - 10ha)**
- 80% of the wheat farmers
- Traditional and inefficient
- Average Yield 2.5t/ha
- Contribute -20% of national production

**Large scale: (> 10ha)**
- 20% of the wheat farmers
- Advanced Technology and efficient
- Average Yield 4-6t/ha
- Contribute -80% of the national production

Figure 1: Wheat growing Regions of Kenya

Courtesy: Nasirembe
Seed Multiplication

Quality Control

Processing

Storage

Certification

After all this what next ???????

➢ Dissemination and Adoption

Kenya Wheat Seed System
Problem & Objective

• Over the last decade, millions of Dollars have been invested in the development of new wheat varieties, yet there is a profound adoption gap particularly among smallholder farmers.

• Identify factors Influencing adoption of the improved wheat varieties in Kenya
Farmers’ adoption behaviour

Varietal Release  Time Lag  Varietal Adoption

Acreage planted with four varieties within 4 years
Factors Influencing Adoption

- Demographic characteristics of the farmers
- Price of inputs and Accessibility
- Own output price
- Out put prices for other competing commodities
- Lack of contractual agreements
- Lack of Information
- Poor dissemination and adoption pathways
## Factors Influencing Adoption of Improved wheat varieties by farmers

<table>
<thead>
<tr>
<th>Variables</th>
<th>Coefficient</th>
<th>Standard Error</th>
<th>T-statistics</th>
<th>Mean Value</th>
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</thead>
<tbody>
<tr>
<td>Constant</td>
<td>-7.3986***</td>
<td>2.133</td>
<td>-3.4750</td>
<td></td>
</tr>
<tr>
<td>Age</td>
<td>-0.0130</td>
<td>.01694</td>
<td>- .767</td>
<td>47.8332</td>
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<tr>
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<td>0.0353</td>
<td>2.847</td>
<td>20.5130</td>
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<td>Education</td>
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<td>0.8653</td>
<td>2.873</td>
<td>0.1472</td>
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<tr>
<td>No. Extension Visit</td>
<td>-0.941*</td>
<td>0.5723</td>
<td>-1.691</td>
<td>0.7472</td>
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</tbody>
</table>
Wheat grain/Seed market structure

![Graph showing cumulative percentage of volume versus cumulative percentage of traders. The graph includes a line of equality and a Lorenz curve.](image)
# Contractual Agreements

<table>
<thead>
<tr>
<th></th>
<th>Frequency</th>
<th>Percent</th>
<th>Cumulative Percent</th>
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</thead>
<tbody>
<tr>
<td>None</td>
<td>79.2</td>
<td>72.0</td>
<td>72.0</td>
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<tr>
<td>oral gentleman agreement</td>
<td>30.8</td>
<td>28.0</td>
<td>100.0</td>
</tr>
<tr>
<td>Total</td>
<td>110</td>
<td>100.0</td>
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</tbody>
</table>

## Specification of the Production Contract

<table>
<thead>
<tr>
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<th>Frequency</th>
<th>Percent</th>
<th>Cumulative Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>None</td>
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<td>89.1</td>
<td>89.1</td>
</tr>
<tr>
<td>specifies product quantity</td>
<td>12.0</td>
<td>10.9</td>
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</tr>
<tr>
<td>Total</td>
<td>110</td>
<td>100.0</td>
<td></td>
</tr>
</tbody>
</table>
Figure 8: Farmer sources of information on new seed varieties
Constraints Faced by small scale farmers in wheat farming

High cost fertilizer
High post harvest losses
Access to quality seeds
High cost of chemicals
Pests and diseases
Lack of contact with Extension agent
Lack of capital
High cost of seeds

Poor road infrastructure & post handling
Sources of seed for farmers

- New varieties were more likely to be used by large scale farmers

- Farmers were the major source of seed for over half of wheat producers in Kenya

- KSU & Kenya seed were also a major sources of seed
Dissemination & Adoption

The emerging declining trends of wheat yield necessitated dissemination and early adoption of new varieties

- **Dissemination**
  - Sensitization workshops
  - Shows
  - Field days
  - Demonstrations

- **Early adoption Study**
  - Surveys
  - Focus group discussions
Educated farmers have a higher probability of adopting new wheat varieties.

The introduction of new wheat varieties should target farmers with ample wheat farming experience.

No contractual arrangements.

Wheat grain and seed trade tend to monopoly.

Risk Averse farmers will not adopt a variety until they see results from other farmers.
...Conclusion

- New varieties are more likely to be used by large scale farmers
- Farmers were the source of seed for over half of wheat producers in Kenya
- Kenya seed was also a major source of seed
- Farmers cited the high cost of seed and limited availability as a factor hindering varietal change
Recommendations

➢ Create awareness and enhance access to quality seeds
➢ Enhance collective action

➢ Farmer groups should be trained on seed multiplication

➢ A comprehensive survey and sensitization workshops to be done
Acknowledgements

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Center Director – KARI-Njoro

DRRW Project

MoA, NGOs, and other stakeholders

BGRI Technical Workshop Organizers
THANK YOU

Improved seed = Improved yields = improve income and food security